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Substance Abuse Patients With Posttraumatic Stress Disorder (PTSD): Identifying Specific Triggers of Substance Use and Their Associations With PTSD Symptoms

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Although individuals with comorbid posttraumatic stress disorder (PTSD) and substance use diagnoses are at heightened risk for relapse after substance abuse treatment, little is known about the specific situations in which these individuals are likely to relapse. The present study was designed to test whether a PTSD diagnosis related to substance use in specific situations in which PTSD symptoms were likely to be present. Data were gathered from inpatients (n = 86) in a substance-abuse-treatment program, and relationships between PTSD diagnosis and frequency of substance use in high-risk situations were examined. As predicted, PTSD diagnosis was related to substance use in situations involving unpleasant emotions, physical discomfort, and interpersonal conflict, but not to substance use in other situations.

Research in the general area of relapse prevention for substance abuse has provided us with some understanding of the types of situations in which relapses occur (Marlatt, 1996), as well as a methodology for examining the role of specific situational factors in substance use (Annis, Graham, & Davis, 1987; Annis & Martin, 1985). Marlatt and his colleagues (Marlatt & Gordon, 1985; Annis et al., 1987) have provided a taxonomy of situations presenting a risk for relapse to substance abuse, which includes both intrapersonal (negative emotional states, negative physical states, positive emotional states, testing personal control, and giving in to temptations or urges) and interpersonal (interpersonal conflict, social pressure to use substances, and positive interpersonal interactions) circumstances. This taxonomy has been found to be effective in helping individuals in substance-abuse-treat-

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ment programs identify their idiosyncratic level of risk in different situations (Annis & Davis, 1989; Dimeff & Marlatt, 1995). We predict that Marlatt's taxonomy will also be useful in helping to determine whether psychiatric comorbidity influences situations in which substance use occurs.

Because substance abuse is often comorbid with posttraumatic stress disorder (PTSD; Brown, Recupero, & Stout, 1995; McFall, MacKay, & Donovan, 1991; Triffleman, Marmar, Delucchi, & Ronfeldt, 1995) and individuals with both disorders are at high risk for relapse (Brown et al., 1995; Ouimette, Ahrens, Moos, & Finney, 1997), information about the specific circumstances in which these individuals are at risk for relapse could greatly inform treatment. To our knowledge, no published studies have used Marlatt's taxonomy to examine specific types of situations in which individuals with PTSD are likely to relapse. However, this framework does provide a useful method of evaluating the relationship between situational factors surrounding use of alcohol and drugs and PTSD symptomatology. Identifying situations in which these treatment-refractory individuals are at highest risk will allow treatment providers to assist patients in learning how to avoid or cope more effectively with these challenging situations.

The current study had the goal of assessing whether the risk for use in specific situations was differentially greater among alcohol and drug users with comorbid PTSD compared with those without this comorbid diagnosis. Of the situations represented in Marlatt's taxonomy, we hypothesized that negative emotional states, negative physical states, and interpersonal conflict would be those most likely to be associated with differential risk for relapse for those with and without comorbid PTSD diagnoses. There were several bases on which we made these predictions. First, substance abusers with comorbid PTSD might be more likely to experience these high-risk situations than those without the comorbid diagnosis. Both negative emotional and physical states are represented among the criteria for PTSD (*Diagnostic and Statistical Manual for Mental Disorders* (4th ed.) [*DSM–IV*]; American Psychiatric Association, 1994), and interpersonal conflict is reported to be more common among individuals with PTSD (E. M. Carroll, Rueger, Foy, & Donahoe, 1985; Kulka et al., 1990). Second, there is some suggestion that situations involving interpersonal conflict, negative emotional states, and physical illness (and possibly by extension negative physical states) may elicit PTSD symptomatology (Johnson, Feldman, & Lubin, 1995; Kilpatrick et al., 1989; Macleod, 1994; Parsons, Faltus, Sirota, Schare, & Daamen, 1988; Peterson & Brown, 1994). Finally, the presence of PTSD symptomatology may compound the negative impact of these situations by impairing the person's ability to cope effectively. Individuals with PTSD tend to use less effective methods of coping with negative affect (Fairbank, Hansen, & Fitterling, 1991; Solomon, Mikulincer, & Flum, 1988), and PTSD symptomatology has been proposed to interfere with effective conflict resolution (Johnson et al., 1995). To examine our hypotheses, we assessed self-reported frequency of substance use in particular situations among patients, with and without comorbid PTSD diagnoses, who were in the early stages of an inpatient treatment program for alcohol and drug problems.

Method

Participants

Participants were 105 persons admitted to a relapse-prevention treatment program on an inpatient substance-abuse-treatment unit at the Boston, MA, Veterans Affairs Medical Center between June 1995 and April 1997. All patients who were referred to the relapse-prevention program had completed detoxification and had expressed an interest in engaging in treatment focused on sobriety. Patients in the relapse-prevention program were eligible for participation in the study if they had completed a clinical assessment battery during their time in the relapse-prevention program ($n = 105$) and had not previously participated in the study. Patients who returned their assessment with missing data on essential variables were excluded from the final sample ($n = 19$). There were no differences between participants excluded from the sample and those included in the analyses on any major variables, including situations surrounding use, PTSD diagnosis, alcohol and drug use composite scores, or any of the demographic variables. The final

Table 1
Sample Characteristics

Variable	*M*	*SD*	%
Age	40.64	5.96	
Race			
White			80.30
African American			16.90
Hispanic			2.80
Gender			
Male			97.70
Female			2.30
Education	12.93	2.00	
Income[a]	$1,120.41	$1,749.46	
Employment			
Employed			70.40
Not employed			29.60
Marital status			
Married			7.00
Formerly married			56.30
Never married			36.60
Lifetime psychiatric hospitalizations	1.63	5.03	
Lifetime jail time	9.42	22.44	
War zone service			
Yes			24.40
No			75.60
Theater of service			
Vietnam			15.10
Granada			2.30
Persian Gulf			2.30
Other			4.70
ASI alcohol composite[a,b]	0.48	0.32	
ASI drug use composite[a,c]	0.18	0.15	
Combined alcohol and drug composite[a,d]	0.33	0.15	

Note. ASI = Addiction Severity Index. Age and education are in years; lifetime jail time is in months. [a]Indexed to past 30 days. [b]Weights and combines items assessing frequency of use and intoxication, presence and frequency of distress from alcohol problems, importance of treatment for alcohol problems, and money spent on alcohol. [c]Weights and combines items assessing frequency of drug use and associated problems, degree of distress from drug problems, and importance of treatment for drug problems. [d]Weighted combination of alcohol and drug composite scores.

sample size was 86. Additional demographic information is provided in Table 1.

Measures

Participants were asked to complete the Addiction Severity Index (ASI; McLellan, Luborsky, Woody, & O'Brien, 1980), which is a structured interview, and a number of self-report questionnaires as part of their routine clinical assessment in the relapse-prevention program. All assessment instruments were administered postdetoxification. The ASI was administered by psychologists, psychology interns, or substance abuse counseling staff trained by licensed psychologists. Doctoral level psychology interns, under the supervision of licensed psychologists, met with participants to provide an explanation of all self-report assessment instruments.

ASI. The ASI (McLellan et al., 1980) is a structured clinical interview designed to assess problems with alcohol and drug use as well as medical, vocational, legal, family–social, and psychiatric issues. In the present study, items from the ASI were used to describe psychiatric history, severity of current alcohol and drug problems, and primary drug of abuse as well as vocational, legal, and other demographic variables. In each problem area on the ASI, information is collected about the history and duration of a problem, as well as the status of the problem during the past 30 days. Participants were

asked to refer to the 30-day period before admission to the hospital for substance abuse treatment, in response to questions about the "past 30 days." McLellan, Luborsky, Cacciola, Griffith, Evans, et al. (1985) provided evidence of good test–retest reliability for individual items on the basis of repeated interviews over a 3-day interval.

Alcohol and drug use composite scores were created from individual ASI items using methods described by McLellan, Luborsky, Cacciola, Griffith, McGahan, and O'Brien (1985). These indexes cover alcohol and drug problems respectively during the past 30 days. We computed separate composite scores for alcohol and drug use (as described by McLellan, Luborsky, Cacciola, Griffith, McGahan, & O'Brien, 1985) as well as an overall composite score combining the alcohol and drug use composites using the same logic. Normative data on the drug and alcohol composite measures have been reported (McLellan et al., 1992). Higher scores on the composites are consistent with more severe problems.

Posttraumatic Stress Disorder Checklist (PCL). The PCL (Weathers, Litz, Huska, & Keane, 1994a, 1994b) is a 17-item self-report rating scale for assessing PTSD according to *DSM–IV* criteria (American Psychiatric Association, 1994), which comprises items corresponding to the three symptom criteria for PTSD. The PCL asks a person to rate the degree to which he or she has experienced symptoms of PTSD over the past month. The anchors for this 5-point Likert-type scale range from 1 (*not at all*) to 5 (*extremely*). On both scales a score of 3 (*moderately*) or greater on a symptom is considered positive for PTSD. In the present study, to meet criteria for PTSD, participants were required to have at least one positive PCL symptom from Criteria B items (Reexperiencing), three positive symptoms from Criteria C (Avoidance/Numbing), and two positive symptoms from Criteria D (Hyperarousal).

In a civilian sample, the PCL was found to have good reliability across subscales (α = .82–.94), a sensitivity of .78, and a specificity of .86 (Blanchard, Jones-Alexander, Buckley, & Forneris, 1996). In examinations of combat-related trauma, the PCL also demonstrated good psychometric properties with high reliability across symptom criteria (α = .92–.93), high test–retest reliability (r = .96), sensitivity (82%), specificity (83%), and convergent validity with other measures of PTSD (Weathers, Litz, Herman, Huska, & Keane, 1993).

Inventory of Drinking Situations (IDS–42) and Inventory of Drug Taking Situations (IDTS). The IDS–42 (Annis et al., 1987) and the IDTS (Annis & Martin, 1985) are used to assess the frequency with which participants drank heavily (IDS–42) or used drugs (IDTS) during the past year in eight types of situations (i.e., Unpleasant Emotions, Physical Discomfort, Pleasant Emotions, Testing Personal Control, Urges and Temptations, Conflict With Others, Social Pressure to Drink, and Pleasant Times With Others). Responses are scored on a 4-point scale, ranging from 1 (*never*) to 4 (*almost always*). The scales yield a profile of high-risk situations for drinking or drug use.

In the present study, we used the IDS–42 for individuals who indicated that alcohol was their drug of choice and the IDTS for individuals who reported that a drug other than alcohol was their drug of choice (heroin, crack or cocaine, or marijuana). To equate responses across the IDS–42 and IDTS, we computed a percentage score for each subscale. Reliability coefficients for the IDS–42 (Annis et al., 1987) and the IDTS (Annis & Martin, 1985) range from .80 to .92 and from .67 to .92 for the subscales, respectively. Evidence for content and external validity for the IDS–42 has been provided (Annis et al., 1987), and evidence for external validity for the IDTS has been described (Annis, Turner, & Sklar, 1996).

Statistical Analyses

Differences between those who did and did not meet PTSD criteria on demographic variables and composite alcohol and drug scores were assessed by means of one-way analyses of variance for continuous variables and chi-square analyses for categorical variables. We conducted multivariate analyses of variance (MANOVAs), to assess differences in situational use of substances for those who did and did not meet PTSD criteria.

Results

Sample Characteristics

Table 1 displays demographic data for the sample of 86 participants with complete data on primary measures. Among these participants, 52 (60.5%) met our criteria for PTSD, and 34 (39.5%) did not meet our criteria for PTSD. Also of note, 30 (35%) identified alcohol as their primary drug of abuse, 15 (15%) identified crack or cocaine as their primary drug, 22 (26%) identified heroin as their primary drug, 1 (1.4%) identified cannabis as their primary drug, 19 (26.8%) identified themselves as having a dual addiction to both alcohol and drugs, and 1 (1.4%) identified themselves as a polydrug (addiction to three or more substances) abuser. The mean composite alcohol (.48) and drug (.18) severity scores of our sample were very similar to those from the normative sample of

public hospital inpatients (.48 and .14 respectively) reported by McLellan et al. (1992). There were no differences across PTSD and non-PTSD groups in terms of identified drug of abuse, marital status, race, gender, age, education, past month income, number of lifetime psychiatric hospitalizations, employment status, amount of jail time, military war zone service, theater of military service, or severity of alcohol or drug problems.

Differences in Situations of Use

We used a one-way MANOVA to test the hypothesis that differences in PTSD diagnostic status would be associated with differences in the frequency of substance use in different situations. The frequency of drug use or heavy alcohol consumption across the eight types of situations (Conflict With Others, Physical Discomfort, Pleasant Emotions, Pleasant Times With Others, Social Pressure to Use, Testing Personal Control, Unpleasant Emotions, and Urges and Temptations) was examined across individuals with and without PTSD diagnoses. This analysis yielded a significant multivariate effect, $F(8, 77) = 6.49$, $p < .001$, and significant univariate effects for situations involving conflict with others, $F(1, 84) = 26.83$, $p < .001$; physical discomfort, $F(1, 84) = 15.80$, $p < .001$; and unpleasant emotions, $F(1, 84) = 33.50$, $p < .001$. There were marginally significant effects for situations involving social pressure to use or drink, $F(1, 84) = 3.66$, $p < .06$, and testing personal control, $F(1, 84) = 3.66$, $p < .06$. None of the other univariate effects approached significance. Individuals who met criteria for PTSD reported a higher likelihood of consuming alcohol or drugs in situations involving unpleasant emotions, interpersonal conflict, and physical discomfort than those without PTSD diagnoses (see Table 2 for group means across situations).

Discussion

In this study, we examined the relationship between PTSD and the likelihood of alcohol and other drug use in specific situations described by Marlatt and others as high-risk situations for relapse in substance abusers (Annis & Davis, 1989; Marlatt & Gordon, 1985). We hypothesized that a diagnosis of PTSD in patients seeking treatment for substance abuse would be associated with more frequent use in certain types of high-risk situations than in others.

As predicted, we found relationships between PTSD diagnoses and drug and alcohol use in situations that might be experienced more frequently by those with PTSD diagnoses, were likely to be evocative of PTSD symptomatology, or might present a greater challenge to individuals with the comorbid diagnosis. Patients who met our criteria for PTSD on the basis of a self-report assessment reported an increased frequency of alcohol and drug use in situations involving unpleasant emotions, conflict with others, and physical discomfort compared with

Table 2
Mean Likelihoods of Substance Use Across Situations by PTSD Status

Situation	PTSD status			
	Positive (n = 52)		Negative (n = 34)	
	M	*SD*	*M*	*SD*
Conflict With Others	59.84*	21.65	33.53*	25.01
Physical Discomfort	51.63*	22.87	31.96*	21.76
Pleasant Emotions	57.76	23.83	50.83	21.36
Pleasant Times With Others	57.99	25.26	53.92	26.14
Social Pressure to Use	64.29	28.98	53.30	27.50
Testing Personal Control	51.83	26.30	40.74	26.27
Unpleasant Emotions	77.58*	14.08	56.07*	20.41
Urges and Temptations	60.19	23.16	57.11	20.91

Note. PTSD = posttraumatic stress disorder.
*$p < .001$.

their counterparts who did not meet criteria for PTSD diagnosis. However, no differences in frequency of use between those who did and did not meet criteria for PTSD were found in other high-risk situations, including those involving pleasant emotions, pleasant times with others, social pressure to use, the testing of personal control, and the ability to manage urges and temptations.

These findings provide us with some direction in trying to understand the link between the presence of PTSD comorbidity among substance abusers and the increased risk of relapse that has been demonstrated by several investigators (Brown et al., 1995; Ouimette et al., 1997). If prior use is related to future risk for relapse, these findings suggest that patients with comorbid substance abuse and PTSD diagnoses may be especially prone to relapse in situations involving interpersonal conflict, unpleasant emotions, and physical discomfort. Therefore, it may be possible to improve treatment outcome by focusing on the need for specific skills to cope with these high-risk situations.

Within the context of relapse-prevention treatment, patients with substance abuse problems are generally taught a variety of skills to cope with the immediate risk for relapse associated with specific situations (Annis & Davis, 1989; Dimeff & Marlatt, 1995; Marlatt & Gordon, 1985). Patients with substance abuse and PTSD may need to learn multiple strategies to avoid relapse in response to PTSD symptomatology and situations in which these symptoms occur. Although avoiding specific situations that trigger PTSD symptomatology may partially reduce the risk of relapse, it is essential that patients also learn active coping strategies to deal with the pressure created by unavoidable situations. Active coping strategies might include specific mood tolerance and management techniques to cope with unpleasant emotions, relationship building and communication skills to avoid and resolve interpersonal conflict, and stress management techniques to avoid physical discomfort associated with hyperarousal.

Once a patient with comorbid substance abuse and PTSD has developed specific coping skills to prevent relapse and manage stress, it is possible to begin treatment focusing on the trauma (Keane, Fisher, Krinsley, & Niles, 1994). Trauma-focused treatment has the potential to further reduce the risk of relapse by decreasing emotional and physical responsiveness when confronted with traumatic reminders (see Keane et al., for a review). At all times during relapse prevention and trauma-focused treatment, an effort should be made to maintain an awareness of the link between alcohol and drug use and the occurrence of these PTSD symptoms.

These recommendations must of course be tempered by the efficacy of relapse-prevention treatment and the validity of techniques used to assess risk for relapse. Although some data regarding the efficacy of relapse-prevention treatment are equivocal, research suggests that this approach may be especially effective with more impaired populations (see K. M. Carroll, 1997, for a review). Furthermore, the Relapse Replication and Extension Project (RREP), a recent multisite study, calls into question the ability of the precipitant of a pretreatment relapse to predict the precipitant of posttreatment relapse (Longabaugh, Rubin, Stout, Zywiak, & Lowman, 1996; Lowman, Allen, Stout, & the Relapse Research Group, 1996; Stout, Longabaugh, & Rubin, 1996). However, the RREP used a different methodology to assess relapse precipitants, and the investigators' recommendations included using more structured measures that allow for the identification of multiple relapse precipitants (Donovan, 1996; Longabaugh et al., 1996; Zywiak, Connors, Maisto, & Westerberg, 1996), an approach used in the present study. Future research in this area would also benefit by gathering information from collaterals on situations of use, to assess the validity of this construct, something we were unable to do in the present investigation.

Our retrospective data do not allow us to test whether PTSD symptoms were elevated in the situations in which increased use occurred or whether alcohol and drug use were prompted by the need to reduce symptomatology. However, the fact that the situations presenting a heightened risk for relapse among substance abusers with PTSD were those in which PTSD symptomatology is likely to be present suggests that substances may be used to reduce symptoms of the comorbid disorder. Future prospective studies are needed to examine whether PTSD symptoms are differentially elevated in situations involving unpleasant emotions, interpersonal conflict, and physical discomfort and if

drug and alcohol use is related to situational increases in symptomatology.

Furthermore, our data speak to the importance of gathering accurate information on comorbid PTSD diagnoses among patients seeking treatment for substance abuse. The 60% prevalence rate of PTSD reported in this sample of inpatient substance abusers is at the high end of ranges reported in prior studies (Brown et al., 1995; McFall et al., 1991; Triffleman et al., 1995). Although the increased likelihood of trauma histories among veteran populations may be expected to produce high rates of PTSD, our prevalence is still considerably higher than that gathered from chart diagnoses in a national Veterans Affairs sample (Ouimette et al., 1997), suggesting either an underrepresentation of PTSD in chart diagnoses or an overdiagnosis in our sample. Although we used a well-validated instrument to arrive at PTSD diagnoses, self-report measures cannot replace the diagnostic accuracy of a structured clinical interview such as the Clinician Administered PTSD Scale (Weiss, 1997).

Finally, because we did not assess for the presence of additional psychiatric diagnoses, we are not able to comment on the specificity of our effects. There is a paucity of literature addressing situations of use among substance abusers with comorbid psychiatric diagnoses. The few studies that do exist have provided mixed results: Two studies (Leibenluft, Fiero, Bartko, Moul, & Rosenthal, 1993; Maisto, Connors, & Zywiak, 1996) demonstrated no effect of comorbid diagnoses on situations of use, and one (Norton, Malan, Cairns, Wozney, & Broughton, 1989) demonstrated that participants who developed alcoholism secondary to panic attacks were more likely to drink alcohol in 8 out of 12 situations than were alcoholics without a history of panic attacks. The careful identification of comorbid symptoms along with idiographic information about high-risk situations may greatly facilitate the design of comprehensive intervention programs aimed at preventing relapse in this high-risk population.

References

American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.

Annis, H. M., & Davis, C. S. (1989). Relapse prevention. In R. K. Hester & W. R. Miller (Eds.), *Handbook of alcoholism treatment approaches: Effective alternatives* (pp. 170–182). New York: Pergamon Press.

Annis, H. M., Graham, J. M., & Davis, C. S. (1987). *Inventory of drinking situations*. Toronto, Ontario, Canada: Addiction Research Foundation.

Annis, H. M., & Martin, G. (1985). *Inventory of drug-taking situations*. Toronto, Ontario, Canada: Addiction Research Foundation of Ontario.

Annis, H. M., Turner, N. E., & Sklar, S. M. (1996). *Inventory of drug-taking situations (IDTS): User's guide*. Toronto, Ontario, Canada: Addiction Research Foundation.

Blanchard, E. B., Jones-Alexander, J., Buckley, T. C., & Forneris, C. A. (1996). Psychometric properties of the PTSD Checklist (PCL). *Behaviour Research and Therapy, 34*, 669–673.

Brown, P. J., Recupero, P. R., & Stout, R. (1995). PTSD substance abuse comorbidity and treatment utilization. *Addictive Behaviors, 20*, 251–254.

Carroll, E. M., Rueger, D. B., Foy, D. W., & Donahoe, C. P. (1985). Vietnam combat veterans with posttraumatic stress disorder: Analysis of marital and cohabitating adjustment. *Journal of Abnormal Psychology, 94*, 329–337.

Carroll, K. M. (1997). Relapse prevention as a psychosocial treatment: A review of controlled clinical trials. In G. A. Marlatt & G. R. Vanden Bos (Eds.), *Addictive behaviors: Readings on etiology, prevention, and treatment* (pp. 697–717). Washington, DC: American Psychological Association.

Dimeff, L. A., & Marlatt, G. A. (1995). Relapse prevention. In R. K. Hester & W. R. Miller (Eds.), *Handbook of alcoholism treatment approaches: Effective alternatives* (pp. 176–194). Boston: Allyn & Bacon.

Donovan, D. M. (1996). Marlatt's classification of relapse precipitants: Is the emperor still wearing clothes? *Addiction, 91* (Suppl.), S131–S137.

Fairbank, J. A., Hansen, D. J., & Fitterling, J. M. (1991). Patterns of appraisal and coping across different stressor conditions among former prisoners of war with and without posttraumatic stress disorder. *Journal of Consulting and Clinical Psychology, 59*, 274–281.

Johnson, D. R., Feldman, S., & Lubin, H. (1995). Critical interaction therapy: Couples therapy in combat-related posttraumatic stress disorder. *Family Process, 34*, 401–412.

Keane, T. M., Fisher, L. M., Krinsley, K. E., & Niles, B. L. (1994). Posttraumatic stress disorder. In M. Hersen & R. T. Ammerman (Eds.), *Handbook of prescriptive treatments for adults* (pp. 237–260). New York: Plenum.

Kilpatrick, D. G., Saunders, B. E., Amick-McMullan,

A., Best, C. L., Veronen, L. J., & Resnick, H. S. (1989). Victim and crime factors associated with the development of crime-related post-traumatic stress disorder. *Behavior Therapy, 20,* 199–214.

Kulka, R. A., Schlenger, W. E., Fairbank, J. A., Hough, R. L., Jordan, B. K., Marmar, C. R., & Weiss, D. S. (1990). *Trauma and the Vietnam War generation: Report of findings from the National Vietnam Veterans Readjustment Study.* New York: Brunner/Mazel.

Leibenluft, E., Fiero, P. L., Bartko, J. J., Moul, D. E., & Rosenthal, N. E. (1993). Depressive symptoms and the self-reported use of alcohol, caffeine, and carbohydrates in normal volunteers and four groups of psychiatric outpatients. *American Journal of Psychiatry, 150,* 294–301.

Longabaugh, R., Rubin, A., Stout, R. L., Zywiak, W. H., & Lowman, C. (1996). The reliability of Marlatt's taxonomy for classifying relapses. *Addiction, 91* (Suppl.), S73–S88.

Lowman, C., Allen, J., Stout, R. L., & the Relapse Research Group. (1996). Replication and extension of Marlatt's taxonomy of relapse precipitants: Overview of procedures and results. *Addiction, 91* (Suppl.), S51–S71.

Macleod, A. D. (1994). The reactivation of post-traumatic stress disorder in later life. *Australian and New Zealand Journal of Psychiatry, 28,* 625–634.

Maisto, S. A., Connors, G. J., & Zywiak, W. H. (1996). Construct validation analyses on the Marlatt typology of relapse precipitants. *Addiction, 91* (Suppl.), S89–S97.

Marlatt, G. A. (1996). Taxonomy of high-risk situations for alcohol relapse: Evolution and development of a cognitive–behavioral model. *Addiction, 91* (Suppl.), S37–S49.

Marlatt, G. A., & Gordon, J. R. (Eds.). (1985). *Relapse prevention.* New York: Guilford Press.

McFall, M. E., MacKay, P. W., & Donovan, D. (1991). Combat-related PTSD and psychological adjustment problems among substance abusing veterans. *Journal of Nervous and Mental Disease, 179,* 33–38.

McLellan, A. T., Kushner, H., Metzger, D., Peters, R., Smith, I., Grissom, G., Pettinati, H., & Argeriou, M. (1992). The fifth edition of the Addiction Severity Index. *Journal of Substance Abuse Treatment, 9,* 199–213.

McLellan, A. T., Luborsky, L., Cacciola, J., Griffith, J., Evans, F., Barr, H., & O'Brien, C. (1985). New data from the Addiction Severity Index: Reliability and validity in three centers. *Journal of Nervous and Mental Disease, 173,* 412–423.

McLellan, A. T., Luborsky, L., Cacciola, J., Griffith, J., McGahan, P., & O'Brien, C. P. (1985). *Guide to the Addiction Severity Index: Background, administration, and field testing results* (DHHS Publication No. ADM 88-1419). Rockville, MD: National Institute on Drug Abuse.

McLellan, A. T., Luborsky, L., Woody, G. E., & O'Brien, C. P. (1980). An improved diagnostic evaluation instrument for substance abuse patients: The Addiction Severity Index. *Journal of Nervous and Mental Disease, 168,* 26–33.

Norton, G. R., Malan, J., Cairns, S. L., Wozney, K. A., & Broughton, R. (1989). Factors influencing drinking behavior in alcoholic panickers and non-panickers. *Behaviour Research and Therapy, 27,* 167–171.

Ouimette, P. C., Ahrens, C., Moos, R. H., & Finney, J. W. (1997). Posttraumatic stress disorder in substance abuse patients: Relationship to one-year posttreatment outcomes. *Psychology of Addictive Behaviors, 11,* 34–47.

Parsons, J. P., Faltus, F. J., Sirota, A. D., Schare, M. L., & Daamen, M. (1988). A survey of the effect of the Vietnam Memorial dedication on psychiatric symptoms in Vietnam veterans. *Military Medicine, 153,* 578–582.

Peterson, L., & Brown, D. (1994). Integrating child injury and abuse–neglect research: Common histories, etiologies, and solutions. *Psychological Bulletin, 116,* 293–315.

Solomon, Z., Mikulincer, M., & Flum, H. (1988). Negative life events, coping responses, and combat-related psychopathology: A prospective study. *Journal of Abnormal Psychology, 97,* 302–307.

Stout, R. L., Longabaugh, R., & Rubin, A. (1996). Predictive validity of Marlatt's relapse taxonomy versus a more general relapse code. *Addiction, 91* (Suppl.), S99–S110.

Triffleman, E. G., Marmar, C. R., Delucchi, K. L., & Ronfeldt, H. (1995). Childhood trauma and posttraumatic stress disorder in substance abuse inpatients. *Journal of Nervous and Mental Disease, 183,* 172–176.

Weathers, F. W., Litz, B. T., Herman, D. S., Huska, J. A., & Keane, T. M. (1993, October). *The PTSD Checklist (PCL): Reliability, validity, and diagnostic utility.* Paper presented at the annual meeting of the International Society for Traumatic Stress Studies, San Antonio, TX.

Weathers, F. W., Litz, B. T., Huska, J. A., & Keane, T. M. (1994a). *The PTSD Checklist for DSM–IV—Civilian version (PCL-C).* (Available from the National Center for Posttraumatic Stress Disorder (116B-2), Veterans Affairs Medical Center, 150 South Huntington Avenue, Boston, MA 02130)

Weathers, F. W., Litz, B. T., Huska, J. A., & Keane, T. M. (1994b). *The PTSD Checklist for DSM–IV—Military version (PCL-M).* (Available from the National Center for Posttraumatic Stress Disorder (116B-2), Veterans Affairs Medical Center, 150 South Huntington Avenue, Boston, MA 02130)

Weiss, D. S. (1997). Structured clinical interview techniques. In J. P. Wilson & T. M. Keane (Eds.), *Assessing psychological trauma and PTSD* (pp. 493–511). New York: Guilford Press.

Zywiak, W. H., Connors, G. J., Maisto, S. A., & Westerberg, V. S. (1996). Relapse research and the Reasons for Drinking Questionnaire: A factor analysis of Marlatt's relapse taxonomy. *Addiction, 91* (Suppl.), S121–S130.

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